

Project Name:

Gold Mine**Reclaim Model - Overview of Program**

All Users are urged to read the Guide for Using the Reclaim Model Spreadsheet.

Note the WorkSheet tabs at the bottom of your Window.**Please scroll down for more information**

Follow these internal links for more information:

[The reclaim menu](#)[What's on the various worksheets](#)[Limitations of the Reclaim Program](#)[Conditions of Use](#)

Reclaim Menu	The default menu bar has been replaced with a menu bar specific to the Reclaim Model.
Dflt Menu	This restores the default Excel menu bar, but with an option to return to the Reclaim menu
Clear	This option deletes all data input, deletes any duplicated elements and blanks out the project name
Duplicate	This option Duplicates components of the project. E.g. if there is more than one Open Pit, use duplicate to add a second Open Pit. Quantities for the new Open Pit are erased, but the Cost Codes are carried over from the original Open Pit. The new Open Pit subtotal is added to the Summary page.
Unit Costs	This option works like a toggle to show either 1 or 2 windows. If there is only 1 window open, this option splits the screen into 2 windows and selects the Unit Costs worksheet in the bottom window. If the Unit Costs are already showing, then this option closes the active window, and maximizes the other window. Be sure to select the window you want to close before selecting this option the second time.
Print All	This option prints the Summary Worksheet, Unit Cost Worksheet, and all the component worksheets. Individual worksheets can be printed directly using standard printing methods, such as Ctl - P.
Quit	You can press Quit from the menu, or you can exit using standard methods, such as alt - F4
Help	Displays this page.

WorkSheets	<p>The reclaim model makes use of separate worksheets to organize the information. After this Instruction Worksheet, there is a Summary Worksheet, followed by 1 worksheet for each reclamation component type. After the component worksheets, there is a list of the Unit Costs, and finally a Title worksheet listing authors and revision dates. You can navigate between the worksheets by selecting the worksheet's tab, at the bottom of your screen.</p>
Summary	This contains the cost for each component, and the ongoing Post Closure costs. The model sums all the reclamation costs and presents the totals according to component type in the Reclamation Cost Summary table. Capital costs are presented separately from ongoing costs, such as monitoring, maintenance and water treatment.
Components	<p>This is where the component cost information is entered. Optionally, you can edit, add, or delete activities from the components. This should be done with care: certain areas of the spreadsheet are defined and used by other parts of the program.</p> <p>Any worksheet can be printed individually. Use the Print All function on the menu to print all component worksheets with non-zero balances.</p> <p>Please do not change the column width, or the contents of the first column on the component worksheets.</p>

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Unit Costs This contains the look up table with costs for typical work

Limitations **Certain Limitations must be kept in mind when using the Reclaim Program.**
The Reclaim Program will NOT work if the worksheets are changed such that these assumptions are no longer true.

WorkSheet Names The names of the worksheets must not be changed. New worksheets can be inserted only if Workbook Protection is turned off using the default menu.

Defined Names Certain ranges have defined names, which must not be changed. These names appear in the "Name Box" to the left of the formula bar.

First line of data The first line of data for any component starts on line 4. Do not change the first 4 lines of a component worksheet, ie the name and column titles.

Cell A2 Cell A2 on the component sheet MUST always contain the count of that component. This is programmatically controlled. DO NOT CHANGE.

Column A This must have an entry in every row until the subtotal, for the calculation of where the subtotal is

L,H, Spec The 3 fields at the bottom of this sheet must not be touched. They are required, to make the lookup function work in Unit Costs.

Adding Lines You can add lines to components and the unit cost table, as long as they are not the last lines. The last line might fall outside the named ranges. You can check the size of the named range by selecting the name from the drop down box at the top left of the sheet. Usually this box has a cel reference, or a name.

Printing A component will only be printed if its sub-total is greater than zero. In addition, a component and the summary sheet cannot be printed if there is an error. Printing has been set to print to 1 page per component. If components are duplicated,they will each have their own page.

Conditions of Use

Government Agencies, mining companies, and others to estimate the cost of mine reclamation. It is recognized that one model can not cover the full range of possibilities encountered during reclamation. It is expected, however, that this model is sufficiently comprehensive and flexible to provide the user with a forecasting tool to meet most reclamation situations. This model is not intended to replace reclamation planning or to be used to determine the activities required to reclaim a site or to dictate how much should be spent on reclamation.

DIAND and Brodie Consulting are not responsible for the completeness or accuracy of any reclamation estimate made using this model. The user agrees to check and take responsibility for all aspects of any cost estimate made using this model.

For program limitations, please see "Limitations" above.

L
H
SPEC

Do NOT delete these

SUMMARY OF COSTS**CAPITAL COSTS**

COMPONENT TYPE	COMPONENT NAME	TOTAL COST	LAND LIABILITY	WATER LIABILITY
OPEN PIT	0	\$0	\$0	\$0
UNDERGROUND MINE	0	\$13,555	\$0	\$13,555
TAILINGS	0	\$0	\$0	\$0
ROCK PILE	0	\$170	\$0	\$170
BUILDINGS AND EQUIPMENT	0	\$8,675	\$0	\$8,675
CHEMICALS AND SOIL MANAGEMENT		\$161	\$0	\$161
WATER MANAGEMENT		\$2,508	\$0	\$2,508
POST-CLOSURE MONITORING AND MAINTENANCE		\$59,500	\$0	\$59,500
SUBTOTAL		\$84,569	\$0	\$84,569
PERCENTAGES			0%	100%
MOBILIZATION/DEMobilIZATION	0	\$41,285	0	41,284
PROJECT MANAGEMENT	5%	\$42	\$0	\$42
Bonding	1%	\$8		
Taxes (GST on supplies)	est.			
Insurance		\$0		
ENGINEERING	5%	\$42	\$0	\$42
CONTINGENCY	20%	\$169	\$0	\$169
Market Price Factor Adjustment	0%	\$0	\$0	\$0
GRAND TOTAL - CAPITAL COSTS		\$126,107	\$0	\$126,107

Open Pit Name:

Pit # 1

ACTIVITY/MATERIAL	Units	Quantity	Cost Code	Unit Cost	% Cost Land	Land Cost	Water Cost	
OBJECTIVE: CONTROL ACCESS								
Fence	m		#N/A	0.00	\$0	\$0	\$0	
Signs	each		#N/A	0.00	\$0	\$0	\$0	
Berm at crest	m3		#N/A	0.00	\$0	\$0	\$0	
Block roads	m3		#N/A	0.00	\$0	\$0	\$0	
Other			#N/A		\$0	\$0	\$0	
OBJECTIVE: STABILIZE SLOPES								
			#N/A					
Off-load crest, soil A	m3		#N/A	0	\$0	\$0	\$0	
Off-load crest, soil B	m3		#N/A	0	\$0	\$0	\$0	
Doze/trimoverburden at crest	m3		#N/A	0	\$0	\$0	\$0	
Drill & blast pit crest	m3		#N/A	0	\$0	\$0	\$0	
buttress slope	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: COVER/CONTOUR SLOPES								
			#N/A					
Place fill, soil A	m3		#N/A	0	\$0	\$0	\$0	
Place fill, soil B	m3		#N/A	0	\$0	\$0	\$0	
Rip rap	m3		#N/A	0	\$0	\$0	\$0	
Vegetate slopes	ha		#N/A	0	\$0	\$0	\$0	
Vegetate pit floor	ha		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: SPILLWAY								
			#N/A					
Excavate channel, soil A	m3		#N/A	0	\$0	\$0	\$0	
Excavate channel, soil B	m3		#N/A	0	\$0	\$0	\$0	
Concrete	m3		#N/A	0	\$0	\$0	\$0	
Rip rap	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: FLOOD PIT								
			#N/A					
remove stationary equipment (sump pump)	each		#N/A	0	\$0	\$0	\$0	
remove power lines	each		#N/A	0	\$0	\$0	\$0	
Embankment/dam - Soil A	m3		#N/A	0	\$0	\$0	\$0	
Embankment/dam - Soil B	m3		#N/A	0	\$0	\$0	\$0	
supply/install pump & piping system	each		#N/A	0	\$0	\$0	\$0	
operate pumps to flood pit	each		#N/A	0	\$0	\$0	\$0	
Lime addition, _____ kg/m3 of water	tonne		#N/A	0	\$0	\$0	\$0	
Lime, purchase and shipping	tonne		#N/A	0	\$0	\$0	\$0	
Other	tonne		#N/A	0	\$0	\$0	\$0	
RECLAIM QUARRIES								
			#N/A					
Contour slopes	m3		#N/A	0	\$0	\$0	\$0	
Berm at crest	m3		#N/A	0	\$0	\$0	\$0	
Place overburden	m3		#N/A	0	\$0	\$0	\$0	
Vegetate	m3		#N/A	0	\$0	\$0	\$0	
OTHER ITEMS								
			#N/A					
			#N/A	0	\$0	\$0	\$0	
			#N/A	0	\$0	\$0	\$0	
Subtotal					\$0	0%	\$0	\$0
					Pct Land	Total Land	Total Water	

Underground Mine Name			UG Mine # <u>1</u>				
ACTIVITY/MATERIAL	Unit	Qty	Cost Code	Unit Cost	% Cost Land	Land Cost	Water Cost
OBJECTIVE: CONTROL ACCESS							
Fence	m		#N/A	0	0	0	0
Signs	each	5	SL	11	\$55	\$0	\$55
Ditch, mat'l A	m3		#N/A	0	\$0	\$0	\$0
, mat'l B	m3		#N/A	0	\$0	\$0	\$0
Berm	m3		#N/A	0	\$0	\$0	\$0
backfill portal #1	m3	40	PORH	205	\$8,200	\$0	\$8,200
backfill portal #2	m3		#N/A	0	\$0	\$0	\$0
cap raise #1	m3	10	SRL	530	\$5,300	\$0	\$5,300
cap raise #2	m3		#N/A	0	\$0	\$0	\$0
cap shaft #1	m3		#N/A	0	\$0	\$0	\$0
cap shaft #2	m3		#N/A	0	\$0	\$0	\$0
backfill open stope	m3		#N/A	0	\$0	\$0	\$0
concrete cap over open stope			#N/A	0	\$0	\$0	\$0
other	m3		#N/A	0	\$0	\$0	\$0
OBJECTIVE: FLOOD MINE			#N/A				
Bulkheads to control water flow	each		#N/A	0	\$0	\$0	\$0
supply/install pump & piping system	each		#N/A	0	\$0	\$0	\$0
operate pumps to flood workings	m3		#N/A	0	\$0	\$0	\$0
	m3		#N/A	0	\$0	\$0	\$0
other	m3		#N/A	0	\$0	\$0	\$0
OBJECTIVE: HAZARDOUS MATERIALS			#N/A				
remove hazardous materials, U/G labor	each		#N/A	0	\$0	\$0	\$0
<i>off-site disposal costs on Chemicals sheet</i>			#N/A	0	\$0	\$0	\$0
remove/decontam. stationary & elect. equip			#N/A	0	\$0	\$0	\$0
remove/decontam. mobile equipment	each		#N/A	0	\$0	\$0	\$0
Remove misc. haz. mat & explosives			#N/A	0	\$0	\$0	\$0
Other			#N/A	0	\$0	\$0	\$0
SPECIALIZED ITEMS			#N/A				
install water quality monitoring pipes			#N/A	0	\$0	\$0	\$0
intall permanent pumping system	each		#N/A	0	\$0	\$0	\$0
other			#N/A	0	\$0	\$0	\$0
Subtotal				\$13,555	0%	\$0	\$13,555
					Pct Land	Total Land	Total Water

COMMENTS:

Tailings Impoundment Name:

Pond # 1

ACTIVITY/MATERIAL	Units	Quantity	Cost Code	Unit Cost	Cost %	Land Cost	Water Cost	
OBJECTIVE: CONTROL ACCESS								
Fence	m		#N/A	0	\$0	\$0	\$0	
Signs	each		#N/A	0	\$0	\$0	\$0	
Ditch, mat'l A	m3		#N/A	0	\$0	\$0	\$0	
, mat'l B	m3		#N/A	0	\$0	\$0	\$0	
Berm	m3		#N/A	0	\$0	\$0	\$0	
Block roads	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: STABILIZE EMBANKMENT			#N/A					
toe buttress, drainage layer	m3		#N/A	0	\$0	\$0	\$0	
toe buttress, bulk fill	m3		#N/A	0	\$0	\$0	\$0	
Rip rap	m3		#N/A	0	\$0	\$0	\$0	
Vegetate	ha		#N/A	0	\$0	\$0	\$0	
Raise crest	m3		#N/A	0	\$0	\$0	\$0	
Flatten slopes	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: COVER TAILINGS			#N/A					
Doze Tailings to final contour	m3		#N/A	0	\$0	\$0	\$0	
excavate/remove tailings	m3		#N/A	0	\$0	\$0	\$0	
geotextile for trafficability	m2		#N/A	0	\$0	\$0	\$0	
place rock layer, cover base layer	m3		#N/A	0	\$0	\$0	\$0	
place till cover	m3		#N/A	0	\$0	\$0	\$0	
place till islands, 10% of cover area	m3		#N/A	0	\$0	\$0	\$0	
Vegetate	m2		#N/A	0	\$0	\$0	\$0	
cover shortfall - processing cost only	m3		#N/A	0	\$0	\$0	\$0	
VERY LOW PERMEABILITY COVER			#N/A					
supply geomembrane, HDPE, ES3, GCL	m2		#N/A	0	\$0	\$0	\$0	
upper and lower bedding layers	m3		#N/A	0	\$0	\$0	\$0	
install geomembrane, HDPE, ES3, GCL	m2		#N/A	0	\$0	\$0	\$0	
erosion protection layer	m3		#N/A	0	\$0	\$0	\$0	
vegetate	ha		#N/A	0	\$0	\$0	\$0	
install infiltration/seepage instrumentation	allow		#N/A	0	\$0	\$0	\$0	
OBJECTIVE: FLOOD TAILINGS			#N/A					
Ditch, mat'l A	m3		#N/A	0	\$0	\$0	\$0	
, mat'l B	m3		#N/A	0	\$0	\$0	\$0	
Doze Tailings to final contour			#N/A	0	\$0	\$0	\$0	
Raise crest of dam	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: TREAT SUPERNATANT			#N/A					
Pump water	m3		#N/A	0	\$0	\$0	\$0	
Supply reagents	tonne		#N/A	0	\$0	\$0	\$0	
Operate treatment plant	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: UPGRADE SPILLWAY			#N/A					
Excavate channel, rock	m3		#N/A	0	\$0	\$0	\$0	
excavate channel, soil	m3		#N/A	0	\$0	\$0	\$0	
Concrete	m3		#N/A	0	\$0	\$0	\$0	
Rip rap	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: STABILIZE DECANT SYSTEM			#N/A					
excavate and replace	m3		#N/A	0	\$0	\$0	\$0	
Plug/backfill with concrete or clay	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: REMOVE TAILINGS DISCHARGE			#N/A					
Cyclones	m3		#N/A	0	\$0	\$0	\$0	
Pipe	m3		#N/A	0	\$0	\$0	\$0	
Remove reclaim barge	each		#N/A	0	\$0	\$0	\$0	
SPECIALIZED ITEMS			#N/A					
install permanent instrumentation			#N/A	0	\$0	\$0	\$0	
install permanent instrumentation, drilling			#N/A	0	\$0	\$0	\$0	
Subtotal					\$0	0%	\$0	\$0
					Pct Land Total Land		Total Water	

Rock Pile Name:

Rock Pile #: 1

ACTIVITY/MATERIAL	Units	Quantity	Cost Code	Unit Cost	% Cost	Land Cost	Water Cost	
OBJECTIVE: STABILIZE SLOPES								
Flatten slopes with dozer	m3	200	DRL	0.85	\$170.00	\$0	\$170	
Flatten "bubble dump" areas	m3		#N/A		\$0.00	\$0	\$0	
Divert runon, ditch mat'l A	m3		#N/A	0	\$0.00	\$0	\$0	
, ditch mat'l B	m3		#N/A	0	\$0.00	\$0	\$0	
Toe buttress, drain mat'l	m3		#N/A	0	\$0.00	\$0	\$0	
, fill mat'l A	m3		#N/A	0	\$0.00	\$0	\$0	
, fill mat'l B	m3		#N/A	0	\$0.00	\$0	\$0	
Other			#N/A	0	\$0.00	\$0	\$0	
OBJECTIVE: COVER DUMP								
Mat'l A	m3		#N/A	0	\$0.00	\$0	\$0	
Mat'l B	m3		#N/A	0	\$0.00	\$0	\$0	
Rip rap	m3		#N/A	0	\$0.00	\$0	\$0	
Vegetate	ha		#N/A	0	\$0.00	\$0	\$0	
Other			#N/A	0	\$0.00	\$0	\$0	
VERY LOW PERMEABILITY COVER								
supply geomembrane, HDPE, ES3, GCI	m2		#N/A	0	\$0.00	\$0	\$0	
upper and lower bedding layers	m3		#N/A	0	\$0.00	\$0	\$0	
install geomembrane, HDPE, ES3, GCL	m2		#N/A	0	\$0.00	\$0	\$0	
erosion protection layer	m3		#N/A	0	\$0.00	\$0	\$0	
vegetate	ha		#N/A	0	\$0.00	\$0	\$0	
install infiltration/seepage instrumentation allow			#N/A	0	\$0.00	\$0	\$0	
OBJECTIVE: RELOCATE DUMPS								
Load, haul, dump or doze	m3		#N/A	0	\$0.00	\$0	\$0	
Add lime	tonne		#N/A	0	\$0.00	\$0	\$0	
Contour reclaimed area	ha		#N/A	0	\$0.00	\$0	\$0	
Other			#N/A	0	\$0.00	\$0	\$0	
SPECIALIZED ITEMS								
install permanent instrumentation			#N/A	0	\$0.00	\$0	\$0	
install permanent instrumentation, drilling			#N/A		\$0.00	\$0	\$0	
other			#N/A	0	\$0.00	\$0	\$0	
Subtotal					\$170	0%	\$0	\$170
						%	Total	Total
						Land	Land	Water

Building / Equip Name:

Bldg / Equip #: 1

ACTIVITY/MATERIAL	Units	Quantity	Cost Code	Unit Cost	Cost % Land	Land Cost	Water Cost	
OBJECTIVE: DISPOSE MOBILE EQUIPMENT								
Decontaminate and ship off-site	each		2 DSOL	500	\$1,000	\$0	\$1,000	
Decontaminate, dispose on-site	each		#N/A	0	\$0	\$0	\$0	
Other	each		#N/A	0	\$0	\$0	\$0	
OBJECTIVE: MILL & SERVICE BUILDING DECONTAMINATION								
Decontaminate crushing plant	each		#N/A	0	\$0	\$0	\$0	
Decontaminate tanks & plumbing	each		#N/A	0	\$0	\$0	\$0	
Decontaminate thickeners	each		#N/A	0	\$0	\$0	\$0	
Decontaminate water treatment plant (lime)	each		#N/A	0	\$0	\$0	\$0	
Decontaminate maintenance shop	each		#N/A	0	\$0	\$0	\$0	
Decontaminate power plant	each		#N/A	0	\$0	\$0	\$0	
Decontaminate bulk fuel storage	each		#N/A	0	\$0	\$0	\$0	
Decontaminate ANFO plant	each		#N/A	0	\$0	\$0	\$0	
Deontaminate offices/warehouse/accom	each		#N/A	0	\$0	\$0	\$0	
Removal of asbestos siding on buildings	each		#N/A	0	\$0	\$0	\$0	
Removal of friable asbestos on equipment	each		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: REMOVE BUILDINGS - ALL BUILDING AREAS SCALED TO ACCO								
crushing plant	m2		#N/A	0	\$0	\$0	\$0	
conveyors & transfer towers	m2		#N/A	0	\$0	\$0	\$0	
tanks & plumbing	m2		#N/A	0	\$0	\$0	\$0	
thickeners	m2		#N/A	0	\$0	\$0	\$0	
water treatment plant (lime)	m2		#N/A	0	\$0	\$0	\$0	
maintenance shop	m2		#N/A	0	\$0	\$0	\$0	
power plant	m2		#N/A	0	\$0	\$0	\$0	
bulk fuel storage	m2	20	BRS2L	55	\$1,100	\$0	\$1,100	
ANFO plant	m2		#N/A	0	\$0	\$0	\$0	
offices/warehouse/accom	m2	150	BRW2L	5.5	\$825	\$0	\$825	
consolidate & dump boneyard debris	m3	100	BRS2L	55	\$5,500	\$0	\$5,500	
other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: BREAK BASEMENT SLABS								
crushing plant			#N/A	0	\$0	\$0	\$0	
conveyors & transfer towers			#N/A	0	\$0	\$0	\$0	
tanks & plumbing			#N/A	0	\$0	\$0	\$0	
thickeners			#N/A	0	\$0	\$0	\$0	
water treatment plant (lime)			#N/A	0	\$0	\$0	\$0	
maintenance shop			#N/A	0	\$0	\$0	\$0	
power plant			#N/A	0	\$0	\$0	\$0	
bulk fuel storage			#N/A	0	\$0	\$0	\$0	
ANFO plant	LS		#N/A	0	\$0	\$0	\$0	
offices/warehouse/accom	LS		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
OBJECTIVE: LANDFILL FOR DEMOLITION WASTE								
Place soil cover	m3		#N/A	0	\$0	\$0	\$0	
Vegetate	ha		#N/A	0	\$0	\$0	\$0	
Landfill disposal fee	tonne		#N/A	0	\$0	\$0	\$0	
OBJECTIVE: GRADE AND CONTOUR MILL & PLANT SITE								
crushing plant	m2		#N/A	0	\$0	\$0	\$0	
conveyors & transfer towers			#N/A	0	\$0	\$0	\$0	
tanks & plumbing			#N/A	0	\$0	\$0	\$0	
thickeners			#N/A	0	\$0	\$0	\$0	
water treatment plant (lime)			#N/A	0	\$0	\$0	\$0	
maintenance shop			#N/A	0	\$0	\$0	\$0	
power plant			#N/A	0	\$0	\$0	\$0	
bulk fuel storage	m3		#N/A	0	\$0	\$0	\$0	
ANFO plant	m3		#N/A	0	\$0	\$0	\$0	
offices/warehouse/accom	ha		#N/A	0	\$0	\$0	\$0	
other	m3		#N/A	0	\$0	\$0	\$0	
OBJECTIVE: RECLAIM ROADS								
Remove culverts			#N/A		\$0	\$0	\$0	
Remove bridges			#N/A		\$0	\$0	\$0	
Scarify and install water breaks	ha	0.5	SCFL	500	\$250	\$0	\$250	
remove/doze down berms			#N/A		\$0	\$0	\$0	
create wildilfe passage ramps			#N/A		\$0	\$0	\$0	
Vegetate	ha		#N/A	0	\$0	\$0	\$0	
			#N/A	0	\$0	\$0	\$0	
SPECIALIZED ITEMS								
Dispose of misc. debris	m3		#N/A	0	\$0	\$0	\$0	
Subtotal					\$8,675	0%	\$0	\$8,675
					Pct Land	Total Land	Total Water	

1 Chemicals and Soil Contamination:

ACTIVITY/MATERIAL	Units	Quantity	Cost Code	Unit Cost	% Cost Land	Land Cost	Water Cost		
HAZARDOUS MATERIALS AUDIT									
Phase 1 audit	each		1 AUDL	7000		\$0	\$7,000		
Phase 2 audit	each		#N/A			\$0	\$0		
HAZARDOUS MATERIALS TO BE CONSOLIDATED FOR REMOVAL									
Waste oils	litre	400	ORL	0.35		\$0	\$140		
Fuel - Type 1, eg diesel dregs	litre	200	FBL	0		\$0	\$0		
Fuel - Type 1, eg gasoline dregs	litre	200	FBL	0		\$0	\$0		
waste batteries	kg	50	PCRL	0.35		\$0	\$18		
assay & environmental lab reagents	litre		#N/A	0		\$0	\$0		
machine shop, paints, solvents etc	litre	10	PCRL	0.35		\$0	\$4		
contaminated soils - hydrocarbon	m3		#N/A	0		\$0	\$0		
metal contam. soil at conc. load-out	m3		#N/A	0		\$0	\$0		
HAZARDOUS MATERIALS									
Transportation to disposal facility			#N/A	0		\$0	\$0		
Disposal fees			#N/A	0		\$0	\$0		
other			#N/A	0		\$0	\$0		
G CONTAMINATED SOILS									
Contam. soil investigation - technical			#N/A	0		\$0	\$0		
Contam. soil investigation - drilling & sampling			#N/A	0		\$0	\$0		
CONTAMINATED SOIL REMOVAL									
contaminated soils - hydrocarbon	m2		#N/A	0		\$0	\$0		
metal contam. soil at conc. load-out	m3		#N/A	0		\$0	\$0		
Load, haul, dump or doze			#N/A	0		\$0	\$0		
Reagents/stabilizing agent	m2		#N/A	0		\$0	\$0		
Contour reclaimed area	m3		#N/A	0		\$0	\$0		
other	m2		#N/A	0		\$0	\$0		
CONTAMIANATED SOIL VERY LOW PERMEABILITY COVE									
supply geomembrane, HDPE, ES3, GCI	m2		#N/A	0		\$0	\$0		
upper and lower bedding layers	m3		#N/A	0		\$0	\$0		
install geomembrane, HDPE, ES3, GCL	m2		#N/A	0		\$0	\$0		
erosion protection layer	m3		#N/A	0		\$0	\$0		
vegetate	m2		#N/A	0		\$0	\$0		
install infiltration/seepage instrumentatio allow			#N/A	0		\$0	\$0		
other			#N/A	0		\$0	\$0		
OTHER									
			#N/A	0		\$0	\$0		
Subtotal						\$161	0%	\$0	\$161
							Pct	Total	Total
							Land	Land	Water

Comments:

1 Water Management :

ACTIVITY/MATERIAL	Units	Quantity	Cost Code	Unit Cost	Cost %	Land Cost	Water Cost	
A OBJECTIVE: WATER SUPPLY EMBANKMENT								
Toe buttress, drain mat'l	m3		#N/A	0	\$0	\$0	\$0	
, fill mat'l A	m3		#N/A	0	\$0	\$0	\$0	
, fill mat'l B	m3		#N/A	0	\$0	\$0	\$0	
Rip rap	m3		#N/A	0	\$0	\$0	\$0	
Vegetate	ha		#N/A	0	\$0	\$0	\$0	
Breach dam	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
B OBJECTIVE: UPGRADE SPILLWAY								
Excavate channel, mat'l A	m3		#N/A	0	\$0	\$0	\$0	
, mat'l B	m3		#N/A	0	\$0	\$0	\$0	
Concrete	m3		#N/A	0	\$0	\$0	\$0	
Rip rap	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
E OBJECTIVE: STABILIZE &/OR UPGRADE DIVERSION DITC								
Excavate channel	m3		#N/A	0	\$0	\$0	\$0	
doze & spread excavated material	m3		#N/A	0	\$0	\$0	\$0	
Vegetate, spread material	ha		#N/A	0	\$0	\$0	\$0	
Rip rap in channel base	each		#N/A		\$0	\$0	\$0	
F OBJECTIVE: BREACH DITCHES								
Excavate breaches	m3		#N/A	0	\$0	\$0	\$0	
install rip rap	m3		#N/A	0	\$0	\$0	\$0	
install flow dissipation	m3		#N/A	0	\$0	\$0	\$0	
vegetate remainder of ditch	m2		#N/A	0	\$0	\$0	\$0	
G OBJECTIVE: REMOVE PIPELINES								
Remove pipes	m	120	POWRL	20.9	\$2,508	\$0	\$2,508	
Concrete plug deep pipes	m3		#N/A	0	\$0	\$0	\$0	
Other			#N/A	0	\$0	\$0	\$0	
H Groundwater Collection - Long-term Collection System								
excavate/install sumps	m2		#N/A	0	\$0	\$0	\$0	
install pumping wells	m3		#N/A	0	\$0	\$0	\$0	
install pumps/pipelines/power supply			#N/A	0	\$0	\$0	\$0	
I OBJECTIVE: COLLECT DRAINAGE FOR TREATMENT								
Excavate channel	m3		#N/A	0	\$0	\$0	\$0	
doze & spread excavated material	m3		#N/A	0	\$0	\$0	\$0	
Vegetate, spread material	ha		#N/A	0	\$0	\$0	\$0	
Rip rap in channel base	each		#N/A	0	\$0	\$0	\$0	
Construct contaminated water storage pond								
Excavation	m3		#N/A	0	\$0	\$0	\$0	
supply geomembrane, HDPE, ES3, GC	m2		#N/A	0	\$0	\$0	\$0	
upper and lower bedding layers	m3		#N/A	0	\$0	\$0	\$0	
install geomembrane, HDPE, ES3, GCL	m2		#N/A	0	\$0	\$0	\$0	
erosion protection layer	m3		#N/A	0	\$0	\$0	\$0	
J OBJECTIVE: TREAT DRAINAGE (see "ONGOING								
Build treatment plant lump sum			#N/A	0	\$0	\$0	\$0	
build sludge containment facility			#N/A	0	\$0	\$0	\$0	
Subtotal					\$2,508	0%	\$0	\$2,508
						Pct	Total	Total
						Land	Land	Water

1 Mobilization:

ACTIVITY/MATERIAL	Units	Quantity	Cost Code	Unit Cost	Cost %	Land Cost	Water Cost	
A MOBILIZE HEAVY EQUIPMENT								
Equipment to regional centre								
. Excavators	km		#N/A	0	\$0	\$0	\$0	
. Dump trucks	km		#N/A	0	\$0	\$0	\$0	
. Dozers	km		#N/A	0	\$0	\$0	\$0	
. Demolition shears			#N/A	0	\$0	\$0	\$0	
. Crane			#N/A	0	\$0	\$0	\$0	
. Light duty vehicles			#N/A	0	\$0	\$0	\$0	
. Other	km		#N/A	0	\$0	\$0	\$0	
. Other	km		#N/A	0	\$0	\$0	\$0	
Equipment, regional centre to site								
. Excavators	km		#N/A	0	\$0	\$0	\$0	
. Dump trucks	km		#N/A	0	\$0	\$0	\$0	
. Dozers	km	50	MHERL	2.81	\$141	\$0	\$141	
. Demolition shears			#N/A	0	\$0	\$0	\$0	
. Crane			#N/A	10,000	\$0	\$0	\$0	
. Light duty vehicles			#N/A		\$0	\$0	\$0	
. Other	km		#N/A	0	\$0	\$0	\$0	
. Other	km		#N/A	0	\$0	\$0	\$0	
B MOBILIZE CAMP								
. allow			#N/A		\$0	\$0	\$0	
C MOBILIZE WORKERS								
. crew travel time	nanday	8	MM<L	193	\$1,544	\$0	\$1,544	
. crew transportation	each		#N/A	0	\$0	\$0	\$0	
D MOBILIZE MISC. SUPPLIES								
. Fuel	litre		#N/A	0	\$0	\$0	\$0	
. Minor tools and equipment	allow		#N/A	0	\$0	\$0	\$0	
. Truck tires	allow		#N/A	0	\$0	\$0	\$0	
E WORKER ACCOMODATIONS								
. mandays			#N/A	0	\$0	\$0	\$0	
F WINTER ROAD								
. Full winter use	km	30	WRL	1320	\$39,600	\$0	\$39,600	
. Limited winter use	km		#N/A	0	\$0	\$0	\$0	
.			#N/A	0	\$0	\$0	\$0	
G INTERIM CARE & MAINTENANCE								
. on-site caretaker	annual		#N/A	0	\$0			
. fuel and misc. supplies	annual		#N/A	0	\$0			
. electrician	days		#N/A	0	\$0			
. mechnaic	days		#N/A	0	\$0			
. pick-up truck	yr		#N/A	0	\$0			
. small dozer	allow		#N/A	0	\$0			
. small excavator	allow		#N/A	0	\$0			
. snow machine	allow		#N/A	0	\$0			
. communications	allow		#N/A	0	\$0			
. Water licence sampling & reporting	each		#N/A	0	\$0			
. Geotechnical assessment	each		#N/A	0	\$0			
. Other	each		#N/A	0	\$0			
.			#N/A	1/2 M cost	\$0			
Total C&M cost	years		#N/A		\$0	\$0	\$0	
Subtotal					\$41,285	0%	\$0	\$41,285
						Pct	Total	Total
						Land	Land	Water

Post-Closure Monitoring & Maintenance:

ACTIVITY/MATERIAL	Units	Quantity	Cost Code	Unit Cost	% Cost Land	Land Cost	Water Cost	
A OBJECTIVE: MONITORING & INSPECTIONS								
Annual geotechnical insp.	each	1	#N/A	\$5,000	\$5,000	\$0	\$5,000	
Survey inspection	each	1	SIS	\$8,000	\$8,000	\$0	\$8,000	
Surface water sampling	each	3	WSL	\$5,500	\$16,500	\$0	\$16,500	
Groundwater Sampling	each		#N/A	\$0	\$0	\$0	\$0	
Receiving/downstream water sampling	each		#N/A	\$0	\$0	\$0	\$0	
Reporting	each	3	RRPTL	\$10,000	\$30,000	\$0	\$30,000	
on-site transportation	each		#N/A	\$0	\$0	\$0	\$0	
transportation to site	each		#N/A	\$0	\$0	\$0	\$0	
Other			#N/A	\$0	\$0	\$0	\$0	
B OBJECTIVE: COVER MAINTENANCE								
Repair erosion - infill gullies			#N/A	\$0	\$0	\$0	\$0	
Repair erosion - upgrade diversion ditches			#N/A	\$0	\$0	\$0	\$0	
Remove problem vegetation			#N/A	\$0	\$0	\$0	\$0	
Repair animal damage	each		#N/A	\$0	\$0	\$0	\$0	
Repair/upgrade access controls			#N/A	\$0	\$0	\$0	\$0	
Other			#N/A	\$0	\$0	\$0	\$0	
C SPILLWAY MAINTENANCE								
Repair erosion	m3		#N/A	\$0	\$0	\$0	\$0	
Clear spillway	each		#N/A	\$0	\$0	\$0	\$0	
Other			#N/A	\$0	\$0	\$0	\$0	
D POST-CLOSURE WATER TREATMENT								
Annual water treatment cost, from Ongoing water			#N/A	\$0	\$0	\$0	\$0	
Subtotal, Annual post-closure costs					\$59,500	\$0	\$59,500	
Discount rate for calculation of net present value of post-clos			3.00%					
Number of years of post-closure activity			100 years					
Present Value of payment stream					\$59,500	\$0	\$0	\$59,500
						Pct Land	Total Land	Total Water

A Unit Cost Estimator

Equipment Productivity Figures and Graphs have been reproduced from Caterpillar Performance Handbook - Edition 32

<http://www.spec-check.com/kom>

A10 EXCAVATION		
PRODUCTIVITY Cat 345 B		
A11 bucket capacity	m3	2.4
A12 fill factor	%	75%
A13 cycle time	seconds	45
A14 operator skill	%	75%
A15 machine availability	%	83%
A16 Altitude adjustment	%	100%
A17 Hourly productivity	m3/hr	89.64
A18		
A19		
A20		
A21		
A22		
A23		
B OPERATING COSTS		
B10 use contractor supplied cost or insert cost components		
B11 Hourly rate - contractor supplied		\$150.00
B12 Excavation cost		1.67 \$/m3
B13		
B14		
B15 Cost of:		
B16 ownership, daily		\$/day
B17 maintenance		\$/hr
B18 fuel		\$/hr
B19 consumables (cutters, tires)		\$/hr
B20 operator		\$/hr
B21 total hourly cost		0 \$/hr
B22 Excavation cost		0.00 \$/m3

C Haul and Dumping		
PRODUCTIVITY 769 rock truck		
C10		
C11 Truck capacity	m3	24
C12	0	
C13 Cycle time		
C14 load time	min.	6.0
C15 haul distance	km	1.5
C16 average velocity	km/hr	20.0
C17 haul time + return time	min.	9.0
C18 wait time	min.	0.5
C19 dump time	min.	1.0
C20 machine availability	%	83%
C21 Altitude adjustment	%	100%
C22	0.3 min/cycle	16.33
C23 Hourly productivity	m3/hr	88.2
D OPERATING COSTS		
D10 use contractor supplied cost or insert cost components		
D11 Hourly rate - contractor supplied		\$140.00
D12 Excavation cost		1.59 \$/m3
D13		
D14		
D15 Cost of:		
D16 ownership, daily		\$/day
D17 maintenance		\$/hr
D18 fuel		\$/hr
D19 consumables (cutters, tires)		\$/hr
D20 operator		\$/hr
D21 total hourly Cost		0 \$/hr
D22 Excavation cost		0.00 \$/m3

E Spreading - Dozing		
PRODUCTIVITY Cat D8 spreading		
E10		
E11 Estimate production using example curves below or	m3/hr	600
E12 equivalent from other supplier		
E13 operator skill		0.75
E14 material type, see table		0.80
E15 slot dozing		1.00
E16 side by side dozing		1.00
E17 visibility		1.00
E18 job efficiency		0.83
E19 Altitude adjustment		1.00
E20 slope adjustment		1.00
E21		
E22		
E23 Hourly productivity	m3/hr	298.8
F OPERATING COSTS		
F10 use contractor supplied cost or insert cost components		
F11 Hourly rate - contractor supplied		\$190.00
F12 Excavation cost		0.64 \$/m3
F13		
F14		
F15 Cost of:		
F16 ownership, daily		\$/day
F17 maintenance		\$/hr
F18 fuel		\$/hr
F19 consumables (cutters, tires)		\$/hr
F20 operator		\$/hr
F21 total hourly Cost		0 \$/hr
F22 Excavation cost		0.00 \$/m3

Sum of costs for excavate load haul dump rock cover on tailings	3.90
ripping in excavation area	0.25
testing	0.2
	\$4.35 /m3

WATER TREATMENT COSTS

ANNUAL VOLUME OF WATER (m3)

Reagent addition rates

Reagent	kg reagent/m3 water	cost in \$/kg, FOB site	Annual reagent cost
H2O2	0.1 kg/m3	1.5	\$0
lime	kg/m3	0.45	\$0
ferric sulphate	kg/m3		\$0
ferrous sulphate	kg/m3		\$0
flocculents	kg/m3		\$0
TOTAL			\$0

Supplies and Labour

power, kW-hr	0 rate, \$/kW-h	0.13	\$0
misc. supplies, hoses, tools			\$0
sampling equip.			\$0
equip. maintenance and parts			\$0
water analysis reporting			\$0
truck rental			\$0
annual mileage			\$0
road maintenance & snow plowing			\$0
electrician/mechanic for treatment plant & power supply			\$0
Annual cost			\$0
labor, hourly rate	35		
men per day for water treatment work			1
on site, days per year			0
spring/fall maintenance, extra work			0
hours worked per year			0
annual labor cost			\$0
Total, labour and supplies			\$0
TOTAL ANNUAL COSTS, reagents plus labour and supplies			\$0
Average treatment cost, \$/m3			\$0.00

Water analyses	
samples per month	10
analysis cost/sample	100
shipping	200
Total Water Sampling	1200

Site Access	
annual site access cost	
road	\$0
air	\$0
winter road	\$0

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW \$	HIGH \$	SPECIFIED \$	COMMENTS
excavate Rock, Bulk							
	drill, blast, load short haul (<500m) Dump	RB1	m3	9.35	14	#N/A	quarry operations for bulk fill
	RB1 + long haul, up to 1500 m	RB2	m3	9.9	14.6	#N/A	
	RB1 + spread and compact	RB3	m3	9.9	14.6	#N/A	
	RB1 + long haul + spread and compact	RB4	m3	10.45	25.25	#N/A	
	RB1 + Specified activity	RBS	m3	#N/A	#N/A	#N/A	
excavate Rock, Controlled							
	drill, blast, load short haul (<500m) Dump	RC1	m3	22	33	#N/A	spillway excavation
	RC1 + long haul, up to 1500 m	RC2	m3	10.45	15.1	#N/A	
	RC1 + spread and compact	RC3	m3	9.9	14.6	#N/A	
	RC1 + long haul + spread and compact	RC4	m3	11.1	15.73	#N/A	
	RC1 + Specified activity	RCS	m3	#N/A	#N/A	145	\$145/M3-drift excavation
excavate Soil, Bulk							
	excavate, load short haul (<500m) dump	SB1	m3	3.2	4.85	#N/A	LOW cost: excavation of loose soil, high volume
	SB1 + long haul, up to 1500 m	SB2	m3	3.98	5.97	#N/A	LOW cost: excavation of loose soil, 1.5 km haul, high volume
	SB1 + spread and compact	SB3	m3	3.7	5.31	#N/A	
	SB1 + long haul + spread and compact	SB4	m3	4.5	8.95	#N/A	LOW cost: excavation of loose soil, 1.5 km haul, high volume, const. of simple soil cover
	SB1 + Specified activity	SBS	m3	2.31	6.38	10.95	LOW cost: rehandle waste rock dump into pit, >500,000 m3, 2 km haul SPECIFIED cost: rehandle waste rock, haul 3 km, place & compact on dam
	Soil, tailings	SBT	m3	3.03	7.15		LOW cost: doze tailings, HIGH cost: excavate & short haul
excavate Soil, Controlled							
	excavate, load short haul (<500 m), dump	SC1	m3	5.61	7.65	#N/A	
	SC1 + long haul, up to 1500 m	SC2	m3	6.95	9.64	#N/A	
	SC1 + spread and compact	SC3	m3	5.61	11.66	#N/A	HIGH cost: for simple soil covers
	SC1 + long haul + spread and compact	SC4	m3	6.3	19.05	#N/A	HIGH cost: for complex covers & dam construction, spillway repair, LOW volume
	SC1 + Specified activity	SCS	m3	#N/A	#N/A	15.75	SPECIFIED cost: backfill adit with waste rock
Geo-synthetics							

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW \$	HIGH \$	SPECIFIED \$	
	geotextile, filter cloth	GST	M2	0.99	1.98	#N/A	FOB Edmonton, add shipping & installation
	geogrid	GSG	M2	4.73		#N/A	
	liner, HDPE	GSHDPE	M2	5.89		#N/A	
	liner, PVC	GSPVC	M2			#N/A	
	geosynthetic installation	GSI	m2	0.83	1	#N/A	
	bentonite soil ammendment	GSBA	tonne	253	286	#N/A	FOB Edmonton, add shipping & mixing
Shaft, Raise & Portal Closures							
	Shaft & Raises	SR	m2	530	1750	#N/A	LOW cost: pre-cast concrete slabs, little site prep. HIGH cost: for hand construction, remote site
	Portals	POR	m3		205	1000	HIGH cost: for excavate & backfill collapsed portal SPECIFIED cost: installed pressure plug
Concrete work							
	Small pour, no forms	CS	m3	297	595	#N/A	
	Large pour, no forms	CL	m3	235	350	#N/A	
	Small pour, Formed	CSF	m3	350	1750	#N/A	
	Large pour, Formed	CLF	m3	290	410	#N/A	
Vegetation							
	Hydroseed, Flat	VHF	ha	1595	4950	#N/A	
	Hydroseed, Sloped	VHS	ha	1848	5555	#N/A	
	veg. Blanket/erosion mat	VB	ha	11000	13200	#N/A	
	Tree planting	VT	ha	11000	13200	#N/A	
	Wetland species	VW	ha	55000	82500	#N/A	
Pumps							
	Small, <	PS	each	3000	6000	#N/A	
	Large, >	PL	each	5000	100000	#N/A	large - 250 hp Gould w/diesel motor
PIPes							

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW \$	HIGH \$	SPECIFIED \$
	Small, < 6 inch diameter	PPS	m	0.5	5	#N/A
	Large, > 6 inch diameter	PPL	m	1	180	#N/A
pump sand BackFill						
		BF	m3	5.5	16.5	#N/A
Fence						
		F	m	11	165	#N/A
Signs						
		S	each	11	33	#N/A
rock, Drill and Blast only						
		DB	m3	11	22	#N/A
(flatten slope, collapse drift)						
excavate Rip Rap						
	drill, blast, load short haul (<500 m) dump and spread	RR1	m3	10.95	16.35	#N/A
	RR1 + long haul	RR2	m3	11.1	16.95	#N/A
	excavate rock from waste dump, short haul, spread	RR3	m3	4.2	5.78	#N/A
	RR3 + long haul	RR4	m3	4.68	6.25	#N/A
	specified rip rap source	RR5	m3	#N/A	#N/A	#N/A
Import LimeStone						
		ILS	tonne	8.8	13.2	#N/A
Import LiMe						
		ILM	tonne	165	495	#N/A
Grouting						
		G	m3	198	240	#N/A
Dozing						
	doze Rock piles	DR	m3	0.85	1.95	#N/A
	doze overburden/Soil piles	DS	m3	0.78	3.11	#N/A
	Scarify	SCF	ha	500	2000	#N/A
						#N/A

LOW cost: pipe removal,
HIGH cost: supply new pipe
SPECIFIED: small, heat traced & insulated pipe
LOW cost: pipe removal,
HIGH cost: supply 24" 100 psi HDPE pipe,
FOB Edm.

add shipping & installation

HIGH cost: quarry & place rip rap in channel

LOW cost: removal of 18 in minus from dump, long haul and spread
HIGH cost: removal of coarse rock from dump, long haul, armour spillway

LOW cost: bulk shipping, high volume, FOB Vancouver/Edmonton

HIGH cost: bags delivered to central Yukon, small volume

HIGH cost: cement, FOB Yellowknife

LOW cost: doze crest off dump

HIGH cost: push up to 300 m

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW \$	HIGH \$	SPECIFIED \$
						#N/A
						#N/A
			each	0	0	#N/A
			each			#N/A
Buildings - Decontaminate						
	Chemicals	BDC	m3	#N/A	#N/A	#N/A
	Asbestos	BDA	m2	21	42	#N/A
Buildings - Remove						
	areas are per floor on 3 m average height					
	Wood - teardown	BRW1	m2	21.5	33	#N/A
	Wood - burn	BRW2	m2	5.5	11	#N/A
	Masonry	BRM	m2	23.65	33	#N/A
	Concrete	BRC	m	33	49.5	6
	Steel - teardown	BRS1	m2	35.2	52.8	240
	Steel - salvage	BRS2	m2	55	82.5	#N/A
Power & Pipe Lines						
	Power lines, remove	POWR	each	20.9	4620	#N/A
Equipment removal						
	decontaminate remove	DSO	each	500	1500	
Closure Plan						
	Audit	AUD	each	7000	20000	
						#N/A
Laboratory Chemicals						
	Remove from site	LCR	pallet	1750	2320	#N/A
	Dispose on site	LCD	each	#N/A	#N/A	#N/A
	PCB - Remove from site	PCBR	litre	33	38.5	#N/A

LOW cost: removal of asbestos siding & flooring
HIGH cost: removal of insulated pipes, friable asbestos

LOW cost: removal and on-site disposal - small wooden structures

LOW cost: removal of building perimeter walls, HIGH cost: per m3 for bulk concrete
SPECIFIED cost: \$/m2 to break floor slab
SPECIFIED cost: demolition shear \$/hour operating

LOW cost: shipping, handling & disposal from Yellowknife

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW \$	HIGH \$	SPECIFIED \$
Fuel						
	Remove from site	FR	kg	0	1.02	#N/A
	Burn on site	FB	kg	0	0	#N/A
Oil						
	Remove from site	OR	litre	0.35	1.02	#N/A
	Burn on site	OB	litre	0.35	0.55	#N/A
Process Chemicals						
	Remove from site	PCR	kg	0.35	2.05	#N/A
	Dispose on site	PCD	kg	#N/A	#N/A	#N/A
Explosives						
	Remove from site	ER	kg	0	2.2	#N/A
	Dispose on site	ED	kg	#N/A	#N/A	#N/A
Contaminated Soils						
	Remediate on site	CSR	m3	38.5	120	#N/A
	consolidate & cover	Use cost code items 1 - 4				
	cover in place	Use cost code items 1 - 4				
Mobilize Heavy Equipment						
	Road access	MHER	\$/km	2.81	8.42	2.05
	Air access	MHEA	each	#N/A	#N/A	1375
Mobilize Camp						
	<20 persons Road access	MC<R	each	#N/A	#N/A	#N/A
	<20 persons Air access	MC<A	each	#N/A	#N/A	#N/A
Mobilize Workers						
	mobilize	MM<	person	193	990	#N/A
	>20 persons	MM>	person	990	1320	#N/A
ACCoModation						
		ACCM	month	1320	1980	#N/A
Mobilize Misc. Supplies						
		MMS	each	#N/A	#N/A	#N/A
Winter Road						
		WR	km	1320	2620	#N/A

LOW cost: bio-remediate on-site. HIGH cost: ship off-site to landfill as haz. waste

SPECIFIED cost: \$/tonne/km in cargo plane
 SPECIFIED cost: helicopter cost, \$/hr of operation

LOW cost: road access. HIGH cost: transport by Twin Otter aircraft

LOW cost, accom in existing camp, per man, HIGH cost: - supply new camp
 LOW cost: winter road - limited use, LOW snowfall

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW \$	HIGH \$	SPECIFIED \$
Visual site Inspection		VI	each	3520	7100	10000
Survey site Inspection		SI	each	#N/A	#N/A	8000
Water Sampling		WS	each	5500	9000	#N/A
site inspection RePorT		RPT	each	#N/A	11000	#N/A
Security Guard		SG	pers/r	5500	7700	#N/A
Maintain Pumping		MP	month	3300	#N/A	#N/A
Clear SpillWay		CSW	each	1870	5280	#N/A
Reporting		RRPT	each	10000	20000	
Build Treatment Plant						
	Small (< 1000 m3/d)	BTPS	lump su	1E+06	2E+06	#N/A
	Large (> 1000 m3/d)	BTPL	lump su	2E+06	3.5E+6	#N/A
Operate Treatment Plant		OTP	m3	0.29	1.65	#N/A
SCariFY road and install water breaks		SCFY	km	3525	4950	#N/A
Water Treatment Chemicals						
	ferric sulphate	ferric	kg	0.67		
	ferrous sulphate	ferrous	kg	0.44		
	lime	lime	kg	0.3		
	hydrogen peroxide, 50%	hperox	kg	1.43		
	Sodium Metabisulfate	Nametab	kg	0.99		
	Caustic soda, 50%	caustic	kg	0.62		
	Sulfuric acid, 93%	sulfuric	kg	0.26		
	flocculant	flocc	kg	5.39		
	copper sulphate	copper	kg			
	typical shipping, to Whitehorse or Yellowknife		kg	0.072		
Typical Labour & Equipment Rates						
	Site manager	Sman	\$/hr	70	80	
	Mine superintendent	super	\$/hr		60	
	Environmental coordinator	env-co	\$/hr		60	
	Journeyman (mech, elec, weld)	trade	\$/hr	50	60	
	Equipment operator	oper	\$/hr	45	55	
	labour - skilled	lab-s	\$/hr	35	38	
	labour - unskilled	lab-us	\$/hr	32	35	
	Security / first aid	safety	\$/hr	38	48	
	Admin.	admin	\$/hr	42	49	

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW \$	HIGH \$	SPECIFIED \$
	Front end loader, ?, Cat992	loader	\$/hr		330	
	excavator, Cat235	excav	\$/hr		175	
	dump truck - tandem	dumprt	\$/hr			
	dump truck off road, Cat 777	dumppo	\$/hr	265		
	dozer, D8, D10	dozer	\$/hr	170	300	

RECLAMATION COST ESTIMATING MODEL (Version 6.1)

Prepared for:
Water Resources Division
Department of Indian Affairs and Northern Development (DIAND)

Prepared by:

<i>Steffen Robertson and Kirsten (Canada) Inc. (SRK)</i>			
M. John Brodie and Patrick J. Bryan	Version 1.1	Lotus 123	April 1992
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<i>Brodie Consulting Ltd.</i>			
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